What is claimed is:

1. A semiconductor laser having a light guide between resonator end surfaces formed by end surfaces of an active layer, comprising

a substrate having a surface tilted to a [0-1-1] direction from a (100) plane and

a semiconductor stack formed on said substrate and comprising an active layer having two types of Group III elements including at least indium (In) and Group V elements including phosphorus (P) and a cladding layer of a first conductivity and a cladding layer of a second conductivity provided above and below said active layer, respectively, wherein

at least one step-like structure is provided on said substrate and said light guide is provided at an upper step side of said step-like structure so that a portion of said light guide not including said resonator end surfaces is positioned in a vicinity of said step-like structure and so that a distance between said resonator end surfaces of said light guide and said step-like structure become greater than a distance between said portion of said light guide not including said resonator end surfaces and said step-like structure.

2. A semiconductor laser as set forth in claim 1, wherein said step-like structure is formed only in a

vicinity of said portion of said light guide not including said resonator end surfaces.

3. A semiconductor laser as set forth in claim 1, wherein

said step-like structure comprises a step difference of a groove provided in said substrate, and

said light guide is arranged at an upper step side of said step difference of said groove so that said portion of said light guide not including said resonator end surfaces is positioned in a vicinity of said step difference of said groove and so that a distance between said resonator end surfaces of said light guide and said step difference of said groove become greater than a distance between said portion of said light guide not including said resonator end surfaces and said step difference of said groove.

4. A semiconductor laser as set forth in claim 3, wherein said groove is formed only in a vicinity of said portion of said light guide not including said resonator end surfaces.

5. A semiconductor laser as set forth in claim 3, wherein said distance between said resonator end surfaces of said light guide and said step difference of said groove are not more than 50 μm.

6. A semiconductor laser as set forth in claim 1,

wherein

said step-like structure comprises a ridge provided projecting out on said substrate and having a width at least that of said light guide and

said light guide is arranged on said ridge so that said portion of said light guide not including said resonator end surfaces is positioned in a vicinity of a step difference of said ridge and so that distance between said resonator end surfaces of said light guide and said step difference of said ridge become greater than a distance between said portion of said light guide not including said resonator end surfaces and said step difference of said ridge.

7. A semiconductor laser as set forth in claim 6, wherein

said substrate is provided with a first ridge having a width at least that of said light guide and extending along a direction in which said light guide extends and second ridges intersecting said first ridge, and

said light guide is arranged on said first ridge so that said resonator end surfaces of said light guide are positioned in regions where said first ridge and said second ridges intersect.

8. A semiconductor laser as set forth in claim 6,

wherein in said regions where said resonator end surfaces of said light guide are positioned, said ridge is formed wider than said region where said portion of said light guide not including said resonator end surfaces is positioned.

9. A semiconductor laser as set forth in claim 6, wherein a width of said ridge is not more than 100 μm.

10. A semiconductor laser as set forth in claim 1, wherein a direction of said resonator is a [01-1] direction of said substrate.

11. A semiconductor laser as set forth in claim 1, wherein an inclination angle to said [0-1-1] direction of said (100) plane of said substrate is 2° to 15°.

12. A semiconductor laser as set forth in claim 1, wherein said substrate comprises GaAs, CaP, or InP.

13. A method for producing a semiconductor laser having a light guide between resonator end surfaces formed by end surfaces of an active layer, comprising the steps of

providing at least one step-like structure on a substrate having a surface tilted to a [0-1-1] direction from a (100) plane and

forming on said substrate a semiconductor stack having an active layer including two types of Group III elements including at least indium (In) and Group V

elements including phosphorus (P) and a cladding layer of a first conductivity and a cladding layer of a second conductivity arranged above and below said active layer, respectively, wherein

said light guide is provided at an upper step side of said step-like structure so that a portion of said light guide not including said resonator end surfaces is positioned in a vicinity of said step-like structure and so that distance between said resonator end surfaces of said light guide and said step-like structure become greater than a distance between said portion of said light guide not including said resonator end surfaces and said step-like structure.

14. A method for producing a semiconductor laser as set forth in claim 13, wherein

a groove is provided on said substrate as said step-like structure and

said light guide is arranged at an upper step side of said groove so that said portion of said light guide not including said resonator end surfaces is positioned in a vicinity of said groove and so that a distance between said resonator end surfaces of said light guide and said groove are greater than a distance between said portion of said light guide not including said resonator end surfaces and said groove.

15. A method for producing a semiconductor laser as set forth in claim 13, wherein

the step of providing said step-like structure includes a step of providing a ridge that has a width at least that of said light guide projecting from said substrate and

a step of arranging said light guide on said ridge so that said portion of said light guide not including said resonator end surfaces is positioned in a vicinity of a step difference of said ridge and so that a distance between said resonator end surfaces of said light guide and said step difference of said ridge are greater than a distance between said portion of said light guide not including said resonator end surfaces and said step difference of said ridge.

16. A method for producing a semiconductor laser as set forth in claim 15, wherein

the step of providing said step-like structure includes a step of providing on said substrate a first ridge having a width at least that of said light guide and extending in a direction in which said light guide extends and second ridges having a width at least a width of said first ridge and intersecting said first ridge and,

the step of forming said semiconductor stack

includes a step of forming it on said substrate where said first said second ridges are formed by metal organic chemical vapor deposition (MOCVD) and

further comprising a step of cleaving said substrate where said semiconductor stack is formed on said second ridges.

17. A method for producing a semiconductor laser as set forth in claim 16, wherein

said first ridge is formed which extends in a [01-1] direction of said substrate and

said second ridges are formed which extend in a [0-1-1] direction of said substrate.

18. A method for producing a semiconductor laser as set forth in claim 16, wherein the step of cleaving said substrate on which said semiconductor stack is formed includes a step of cleaving said second ridges at a position at said light guide side from a center line equally dividing said second ridges in an extending direction of said second ridges.